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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/019,087 02/05/98 ENOMOTO

H TIJ-24816

EXAMINER

IM62/1123

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ART UNIT

PAPER NUMBER

1765

DATE MAILED:

11/23/99

7

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09109087

Applicant(s)

Khomoto et al.

Examiner

V. P. Kano

Group Art Unit

1205

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Response

A SHORTENED STATUTORY PERIOD FOR RESPONSE IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a response be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for response is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to respond within the set or extended period for response will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

☒ Responsive to communication(s) filed on 9/14/99.

☒ This action is **FINAL**.

- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-11 is/are pending in the application.
- Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-11 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
- ☐ received.
- ☐ received in Application No. (Series Code/Serial Number) _____.
- ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

*Certified copies not received: _____.

Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☐ Interview Summary, PTO-413
- ☐ Notice of References Cited, PTO-892
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Other _____

Office Action Summary

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DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuji (U.S. 5,514,625).

In regard to claims 1-3, Tsuji teaches a method of manufacturing a semiconductor device comprising: forming an insulating film over a substrate (col. 5, lines 7-10), forming a first mask on said insulating film (col. 5, line 24) and forming a resist film on the first mask film (col. 5, line 18). This resist film serves as a mask during the etching process (col. 5, lines 32-35) to form an opening (col. 5, lines 29-31), which is followed by the formation of trenches on said insulating film (col. 5, lines 26-28). Furthermore, Tsuji teaches the formation of a second mask film (col. 5, line 46) and its use as an etching mask during the formation of connecting holes (col. 5, lines 44-50). Tsuji also teaches the formation of a wiring layer by burying an electroconductive material in the trenches (col. 7, lines 19-23).

Unlike the claimed invention, Tsuji does not disclose the removal of the first and second mask films, nor does he disclose the trenches having sidewalls.

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tsuji by removing the first and second mask films during the semiconductor manufacturing process, since it is well known in the art of semiconductor manufacturing that masks are meant to be removed after etching and other processes. Furthermore, although not disclosed, it is obvious to one skilled in the art that the trenches in Tsuji have sidewalls, as there is no other possible way for a trench to exist known to the Examiner.

In regard to claims 4, 7 and 9, these claims differ from Tsuji by specifying various materials for the insulating film. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tsuji by using different materials to form the insulating film in anticipation of an expected result, since the use of such different materials is well known in the art of semiconductor manufacturing.

In regard to claims 5-6, 8 and 10-11, these claims differ from Tsuji by specifying that the holes are in contact with the lower electrodes in the capacitors of the memory cells, and by disclosing that capacitors are set for storing information. It is the Examiner's position that these are conditions well known in the semiconductor art, and that it would have been obvious to modify Tsuji by disclosing the above-mentioned information.

Response to Arguments

3. Applicant's arguments filed 9/14/99 have been fully considered but they are not persuasive.

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Applicant's arguments have been addressed as part of the *Claim Rejections - 35 USC § 103* section.

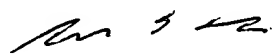
4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vanessa Perez-Ramos whose telephone number is (703) 306-5510.

VPR

November 21, 1999


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